NavMed 369

UNITED STATES NAVY

MEDICAL NEWS LETTER

Rear Admiral Bartholomew W. Hogan MC USN - Surgeon General
Captain Leslie B. Marshall MC USN (RET) - Editor

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HISTORICAL FUND
of the
NAVY MEDICAL DEPARTMENT

A committee has been formed with representation from the Medical Corps, Dental Corps, Medical Service Corps, Nurse Corps, and Hospital Corps for the purpose of creating a fund to be used for the collection and maintenance of items of historical interest to the Medical Department. Such items will include, but will not be limited to, portraits, memorials, etc., designed to perpetuate the memory of distinguished members of the Navy Medical Department. These memorials will be displayed in the Bureau of Medicine and Surgery and at the National Naval Medical Center. Medical Department officers, active and inactive, are invited to make small contributions to the fund. It is emphasized that all donations must be on a strictly voluntary basis. Funds received will be deposited in a Washington, D. C. bank to the credit of the Navy Medical Department Historical Fund, and will be expended only as approved by the Committee or its successor and for the objectives stated.

It is anticipated that an historical committee will be organized at each of our medical activities. If you desire to contribute, please do so through your local historical committee or send your check direct, payable to Navy Medical Department Historical Fund, and mail to:

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Editor

(Detach here)

Chief, Bureau of Medicine and Surgery _____
Navy Department, Potomac Annex (date)
Washington 25, D. C.

I wish to continue to receive the U. S. Navy Medical News Letter.

Name
or
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Are You Ready to Treat Cardiac Arrest?

The U. S. Public Health Service has estimated that approximately ten million surgical operations are performed in this country each year. Every operation is of vital importance to the persons involved. To the patient about to be anesthetized, there is no "minor procedure." When the fact is considered that sudden death may occur during one in every 1000 to 2000 operations and that the total number of cases of cardiac arrest is about 10,000 annually, the implications are clear and sobering.

This problem has been extensively discussed in the medical literature; this article defines clearly the basic concepts and requirements for successful resuscitation of the heart when the need arises. Many members of the hospital team—nurse, anesthesiologist, surgeon, and administrator—have important duties and responsibilities before, during, and after the emergency.

The term, "cardiac arrest," means the sudden occurrence of death resulting from the cessation of effective pumping action of the heart. It does not apply to cases of fatal illness or trauma where, obviously, the stopping of the heartbeat is merely the terminal premortem event. Cardiac arrest occurs unexpectedly. The diagnosis is made by noting the disappearance of pulse, blood pressure, and heartbeat. The respirations usually cease simultaneously. The skillful anesthesiologist checks these vital signs at frequent intervals and is aware immediately of any abnormality that may herald the onset of an arrest.

For a long time it has been known that death resulting from cessation of the heartbeat may occur in two ways. One is the development of a complete lack of heart activity called cardiac-standstill or asystole. In this state, the heart is dilated, flabby, and without rhythmic contractions. (Occasionally, it may stop in a state of continual contraction, i. e., systole.)

The second type of cardiac arrest is called ventricular fibrillation. In this type of death, there is the abrupt onset of a convulsion of the heart which is converted into a squirming mass of muscle with no purposeful contractions. Although the heart is very active during fibrillation, no blood is being pumped out to the brain, coronary arteries, and other vital structures.

The type of death resulting from ventricular fibrillation is important because it accounts for most of the high mortality of coronary artery disease. Frequently, these deaths are very sudden. A fatal attack may occur while a man is shoveling snow, while he is playing golf, or while he is asleep. These persons die because the distribution of oxygen through the coronary arteries is uneven and they develop fatal heart convulsions or ventricular fibrillation.

Simply because cardiac arrest may happen without warning does not mean that every effort should not be expended to prevent its occurrence.

All of the factors involved are not understood. Basically, however, there is always some disturbance in the proper oxygenation of the heart muscle, the myocardium.

Sometimes, this may be due to coronary artery sclerosis. It is known that patients with this disease can, and do, undergo major surgery daily. However, the surgeon and anesthesiologist must be especially alert in such cases. Hypotension and anoxia must be avoided. A patient with chronic pulmonary disease and decreased vital capacity is unable to oxygenate his blood as rapidly or as completely as a normal person. Extra caution is indicated in such situations. Patients with low blood volume are unable to transport a full allotment of oxygen even though the broncho-pulmonary system may be normal. Here, preoperative blood transfusions are necessary.

The patient should be in the best possible physical condition prior to operation. He should be prepared psychologically, also. The almost hysterical patient who states that he will not survive a surgical procedure frequently voices an accurate prediction.

During the operative procedure, the anesthesiologist must be alert constantly for abnormal signs. Blood loss should be replaced accurately. Hypotension is counteracted with vasopressors, if necessary. Evidence of excessive vagotonia is treated with repeated adequate doses of atropine. Tachycardia and acute cardiac failure usually will respond to intravenous digitalis. Tracheal suction may be used to maintain the always indispensable clear airway. The surgeon and his assistants should be aware of the lack of tissue bleeding and cyanosis. These danger signals must be heeded. Certain manipulations, such as dissection of the hilum of the lung and traction on the mesentery, may produce noxious stimuli and should be discontinued immediately if untoward signs appear.

Occasionally, in spite of all precautions taken before and during an operation, the heart will suddenly stop. When the heart stops, an emergency exists. Blood and oxygen no longer are being delivered to the brain which immediately begins to degenerate. If effective oxygenation is not restored to this vital organ within the brief period of 3 to 5 minutes, the patient will die.

Every physician who undertakes to perform a surgical operation should be thoroughly familiar with the technique of cardiac resuscitation. The essentials must be mastered in the animal laboratory.

The operating room personnel needs preliminary training as to its supportive roles in such cases. The first requisite is an experienced and interested surgeon who is willing and able to proceed with the training of his assistants and other personnel. Nurses, internists, anesthetists, lay administrators—all can be taught how to perform cardiac massage and how to insert an endotracheal tube to provide oxygen to the lungs. A medical degree is not a prerequisite to being able to resuscitate a stopped heart.

It should be the hospital's responsibility to provide the following equipment for possible use during every operation:

1. Endotracheal tube to establish a clear airway
2. Oxygen and a rubber bag to ventilate the patient mechanically
3. Scalpel to open the chest

A defibrillating apparatus should be available in every operating suite. A number of such devices are manufactured by different companies. Such an instrument will deliver an electric shock to the heart of 110 volts at 1.0 to 1.5 amperes for one second. Such a shock causes a tetanic contraction of the heart and the abolition of all activity. Fibrillation is converted to standstill and a sustained heartbeat then can be established with relative ease.

By squeezing oxygen out of a rubber bag by hand, a person can pump oxygen into the lungs. Mechanical ventilation is more effective and frees the anesthesiologist's hands for other activities. A mechanical respirator for cardiac resuscitation and for all operative procedures in which continuous adequate oxygenation is desired should be a part of the equipment.

The basis of successful cardiac resuscitation is the appreciation of the fact that the procedure is divided into two separate and distinct steps: (1) restoration of oxygen system, an emergency act that must be accomplished within from 3 to 5 minutes; and (2) restoration of coordinated heartbeat which may be accomplished deliberately and, in some unusual cases, may take place over a period of several hours after the oxygen system has been reestablished. As soon as cardiac arrest occurs, Step (1) should begin immediately! Each member of the operating room team has an individual role to play in this critical drama.

The anesthesiologist: (1) inserts an endotracheal tube at once and provides a clear airway; (2) establishes continuous adequate oxygenation, using 100% oxygen delivered to the lungs under positive pressure at a rate of 20 or 30 respirations per minute, and (3) observes the lungs for adequate inflation and deflation during each respiratory cycle. During Step (1), the anesthesiologist provides oxygen and artificial respiration.

The surgeon has an equally important duty which is performed simultaneously. He proceeds automatically with a preconceived and carefully rehearsed plan of action; he opens the chest widely without regard for asepsis or bleeding (no blood pressure) through the left fourth intercostal space from the sternal border to the mid-axillary line and inserts a rib-spreader to prevent fatigue of his wrist from pressure of adjacent ribs; he circulates oxygenated blood by rhythmic manual cardiac compression ("massage") with one or both hands at a rate of 60 to 70 per minute so that a palpable peripheral pulse is produced.

It is important to release the heart after each compression so that adequate venous filling may occur. The correct technique of rhythmic

cardiac compression can be learned only by practice. During Step (1), the surgeon provides artificial circulation of oxygenated blood.

Once the anesthesiologist and surgeon have accomplished their particular duties, the patient may be kept alive indefinitely and the emergency is over. Ancillary procedures then may be performed.

Step (2), the restoration of the coordinated heartbeat, is accomplished deliberately at any time after the oxygen system has been reestablished. If the pericardium prevents satisfactory emptying of the heart, it should be opened from base to apex and the heart grasped directly. If the heart is in standstill, frequently it will begin to beat spontaneously as soon as oxygenation and mechanical circulation have been started. If the cardiac massage is performed correctly, the coronary arteries and myocardium will become well oxygenated and pink. Sometimes, from 3 to 5 cc. of 1:1000 solution of epinephrine, diluted 10 times with saline, must be injected into the right ventricle to restore myocardial tone. Repeated injections of this drug may be necessary. Occasionally, such injections into the heart may throw it out of standstill into fibrillation.

If the heart is fibrillating, it is necessary to defibrillate it. However, a well-oxygenated myocardium with good tone must be present before defribillation is possible. It is useless to shock a dilated, flabby, and cyanotic heart. After the heart is properly prepared by massage and after the application of 3 to 5 cc. of 1% procaine hydrochloride to the epicardial surfaces and the injection of a similar quantity of this drug into the right ventricle, the electrodes of the defibrillator are placed over as large a surface of the myocardium as possible. A standard shock (110 volts, 1.0 to 1.5 amperes, 1 to 2 secs.) is administered. If conditions are right, the heart will convert from fibrillation to standstill which is handled as previously described.

Once the heart has resumed its coordinated beat, further manipulation and drug administration should be avoided. If beginning contractions are feeble, assistance may be given by additional rhythmic cardiac compression as needed.

The heart should be observed for from 20 to 30 minutes to make certain that the beat will be sustained. Chest wall hemostasis may be secured during this period. The pleural cavity should be aspirated completely and antibiotics instilled. A chest tube is inserted for drainage. The pericardium should be closed tight enough to prevent herniation of the heart, or it should be left wide open. The chest wall is closed in layers using absorbable sutures throughout. If resuscitation has been started promptly and performed correctly, the patient usually will be awake by the end of the procedure. Additional anesthetic agents may be necessary.

After the heartbeat has been restored and the chest has been closed, three different results may be expected. The first and most desirable is the complete restoration of cardio-pulmonary activity with no brain damage

and with a complete return to normal. This result depends upon correct treatment of the arrest.

The second result—one that occurs far too frequently—is the satisfactory resumption of normal heartbeat, but with so much anoxic brain damage that death occurs several hours later. This is due to a failure to restore the oxygen system within the critical time limit.

The third type of result—which is extremely rare yet prevents many surgeons from attempting resuscitation—is the permanent restoration of cardiopulmonary function, but with such a degree of brain damage as to leave the patient in a decerebrate condition. In most instances, it is impossible to predict when such a result will occur.

Close observation is necessary for several days. Oxygen is administered by nasal catheter. Large doses of broad-spectrum antibiotics are given. If the patient has evidence of cardiac failure, digitalis preparations are indicated. In almost every case of complete recovery from cardiac arrest, the patient is mentally alert within a few hours after the resuscitation. In those cases in which brain damage has been excessive, the patient usually develops a high fever and dies within 24 to 48 hours. It is unusual for a heart that has been resuscitated successfully to undergo arrest a second time. This is possible, however, and the patient must be monitored closely for such an occurrence and a possible second resuscitation. A number of patients who have developed cardiac arrest have been resuscitated successfully and later have undergone the originally planned operation without difficulty.

There always is a question about what to tell the family and the patient in case of cardiac arrest. There can be only one answer: the truth. There is a risk in every operation and a certain number of patients may have a cardiac arrest. The members of the family should have this explained to them as soon as it happens. They should be prepared for the worst possible eventuality.

Relatives should be told that an unexpected catastrophe has occurred, and that the doctor is doing precisely the right thing, and that he will report to the family at once when the outcome is definite.

A surgeon and the hospital cannot, in most instances, be held directly accountable for a cardiac arrest. Nor can an unsuccessful attempt be regarded as unsatisfactory performance. However, a good effort must be made in every case.

The techniques and suggestions outlined in this article are based on laboratory observations and wide clinical application. If they are followed, a high degree of success in cardiac resuscitation may be anticipated. (Mozen, H. E., Beck, C. S., Are You Ready to Treat Cardiac Arrest? Mod. Hosp., 89: 51-56, November 1957)

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Recent Research Reports

Naval Dental Research Facility, NTC, Bainbridge, Md.

1. Hyaluronidase Activity of Saliva - Effect of Antibiotic Therapy. NM 75 01 26.01.08, 1 October 1957.

Naval Dental School, NNMC, Bethesda, Md.

1. Description of a Continuous Culture Procedure for Studying Demineralization of Teeth. NM 008 015 (Pilot), 1 June 1957.
2. Usefulness of the Isolated Mouse Intestine for the Differentiation of Acetylcholine and Histamine-Like Substances. NM 006.012.04.83, 15 July 1957.
3. Review of the Endocrine Responses in Rats and Mice to Increasing Population Size Including Delayed Effects on Offspring. Lecture and Review Series No. 57-2, 6 August 1957.

Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Behavior of the Formed Elements of Blood Incubated with Bacterial Endotoxins, NM 007 081.12.03, 11 July 1957.
2. The Mechanism of Action of Bacterial Endotoxins on Whole Blood In Vitro, NM 007 081.12.04, 11 July 1957.
3. The Response of Normal and Irradiated Mouse Ileal Tissues to Selected Doses of Acetylcholine and Histamine. Memo. Report 57-2, NM 006 012.04, 15 July 1957.
4. Analysis of the Effects of Total Body X-Irradiation on the Body Weight of White Swiss Mice. III. Body Weight Changes of Female Mice as a Biological Dosimeter. NM 006 012.04.103, 1 August 1957.
5. Evoked Electrical Activity of the Brain During Hypothermia; the Visual System. NM 71 05 00.03.01, 26 August 1957.
6. Comparison of the Extraction of Potassium and Sodium from Liver Tissue by Acid and Water. NM 007 081.17.03, 28 August 1957.

Naval Medical Research Unit, No. 3, Cairo, Egypt

1. Needle Biopsy in the Etiologic Diagnosis of Splenomegaly. Report I. NM 52 02 03.3, May 1957.
2. Needle Biopsy in the Etiologic Diagnosis of Splenomegaly, Report II, NM 52 02 03.3, June 1957.
3. Needle Biopsy of the Liver and Spleen in Bilharzial Patients. Report II. Experience in 363 Biopsies. Part I. Procedure, Indications, Contraindications and Limitations of Use. NM 52 02 03.5, August 1957.

(Research Reports will be continued in an early issue)

Revised Morbidity Report

A morbidity report has long been an integral part of the reporting system of the Navy's Medical Department. It is a finger on the pulse of the Navy. Its purpose is twofold. First, it makes available for administrative use current data on military noneffectiveness arising from disease and injury. The morbidity report is the only source for a current noneffective rate for all ships and stations, showing how many persons are incapacitated. This noneffective rate is one of the indices which the Bureau and Department of Defense take into consideration when planning on a current basis for personnel and size of medical facilities. Secondly, it provides current information on the occurrence of disease and injury. Since the prevention and control of disease is one of the important challenges to the Medical Department, it is essential that data be collected on as current a basis as is feasible to show what is occurring where, thus focusing attention on any problem areas that may be developing. This is particularly true of the infectious diseases when early implementation of control measures is of primary importance in preventing the spread of the disease. While the NAVMED-F card furnishes some of this information, it is an individual patient record not submitted until the patient is taken off the sicklist, a long time lag in some instances. Consequently, the Morbidity Report, by summarizing cases admitted to the sicklist at each ship and station during the month, fulfills purposes which the NAVMED-F cannot meet.

The information collected on the Morbidity Report has a multiplicity of specific uses. (1) It is used in establishing trend data through which incipient stages of an epidemic may be recognized. (2) It makes it possible to spot unusual disease incidence at a particular station and to evaluate the impact of the incidence on a general area or group of ships. (3) It aids in determining where Preventive Medicine Units should be sent. (4) It makes possible combinations of data, such as by ship type (destroyer, aircraft carrier, etc.) or by area to determine if there are unique problems in any one group. (5) It provides information for current evaluation of the effects of the various prophylactic programs instituted by the Bureau. (6) It gives current data on accidents, which is of use in accident-prevention programs. (7) It provides an up-to-the-minute picture of the incidence of infectious diseases among naval personnel, which may be combined with data from the other branches of service to show what is happening in the Armed Forces. This is particularly useful when it is necessary to give information to the U. S. Public Health Service or other agencies interested in getting a national picture on such diseases as poliomyelitis or influenza.

The Morbidity Report now in use—the DD Form 442—was designated by the Department of Defense in 1951 for use by all military medical services. Thus, the three services were all required to use a standard form. Recently,

the Department of Defense authorized destandardization of the Morbidity Report, that is, with certain restrictions, each of the three services may tailor the report to its own specific needs. Continued uniform reporting will be required for certain items, such as military strengths served, admissions, dispositions, and other related items for which uniform reporting is necessary to permit exchange of data between military departments. Effective 1 January 1958, the Navy will replace DD Form 442 with a revised Morbidity Report, NAVMED-1390. In addition to meeting Department of Defense requirements, NAVMED-1390 was designed to provide certain data of especial value for administrative purposes of the Bureau.

The major changes in the revised Morbidity Report are:

1. A reduction in the reporting requirements for U. S. naval hospitals.
2. Reporting is required for fewer disease categories.
3. Only direct admissions of new cases are reported by disease category. Diagnosis other than admitting diagnosis shall not be reported.
4. Unconfirmed diagnoses are reported as "DU" under the suspected diagnostic category.
5. The reporting of new cases of certain conditions treated on an outpatient basis.
6. A correlation is made between routine morbidity reports and special epidemiological reports on certain infectious diseases of unusual importance or interest.

Exhibit A is an illustration of the face or front of NAVMED-1390 and Exhibit B is an illustration of the back of the report. The report is divided into seven parts. The following discussion concerns specific reporting procedures as planned at the time this article went to press. Any further changes made before NAVMED-1390 is released will be reflected in the instructions to be distributed later.

Who reports? U. S. naval hospitals are required to prepare parts I and II for all personnel, including patients, and parts III, IV, and V for their staff personnel only. They shall not report parts VI and VII. Station hospitals, ships, and all other Navy and Marine Corps activities having medical personnel attached for the purpose of providing medical services shall complete the entire report—parts I through VII.

When? The Morbidity Report, as in the past, shall be prepared monthly as of 2400 of the last day of the month and shall be forwarded to the Bureau by the seventh day of the following month.

Parts I and II provide the information required of all three services by the Department of Defense and include data on interservice hospitalization for exchange among services, giving each service a rounded-out current picture of their medical problems.

Part I. The average strength shall be computed as in the past. Race and sex will be reported for Army and Air Force personnel, but will not be reported for Navy, Marine Corps, or other personnel.

Part II. Patients admitted, disposed of, and remaining are reported in part II by major classification. The principal changes in part II are (1) the elimination of reporting "taken up by change of classification" and "dropped by change of classification," (2) the disposition categories "duty" and "disability separation" are not reported separately, but are included under "all other dispositions," and (3) the reporting of "Carded for Record Only" (CRO) is required for deaths or wounded-in-action cases only.

Diagnoses are reported in parts III through VI. In order to reduce clerical work in the field, reporting is required on far fewer diagnostic conditions than formerly and, except for venereal disease, diagnostic class totals have been omitted from NAVMED-1390. The diagnoses on which reporting is required are, for the most part, those which are most subject to seasonal and geographic fluctuations and are of special importance from the standpoint of international health.

Part III. This part provides for the reporting of venereal disease and nongonococcic urethritis. Since nearly all of the venereal-disease and nongonococcic urethritis cases are treated while the patients continue in a duty status, the treatment of venereal disease problems and the effectiveness of venereal-disease treatment cannot be properly evaluated without the inclusion of outpatient cases. For this reason, new cases not admitted to the sicklist (outpatient treated), as well as direct admissions to the sicklist, shall be reported in part III for these diagnoses. This report will be the Medical Department's chief source of data on venereal diseases, since simultaneous changes in pertinent instructions are planned to eliminate the present requirement for submission of a NAVMED-F card for those cases of venereal disease which have been Carded for Record Only (CRO).

Part IV. This part contains information on selected specific conditions diagnosed on admission to the sicklist, whether established or suspected. Those diagnosed are mainly the major infectious diseases which may be considered as epidemic threats or, as in the case of heat prostration, prophylactic-inoculation reaction, or penicillin reaction, reflect information useful to the Preventive Medicine Division of the Bureau. In this section, unconfirmed diagnoses shall be reported as "DU" under the suspected diagnostic category. It is felt that the reporting of these conditions, even though the diagnosis is not established, will give a more complete and up-to-the-minute picture of what is happening in all areas and permit timely action when it is required.

Part V. Diseases of which even 1 case is a significant occurrence in operating elements of the Navy and Marine Corps are listed in part V.

Exhibit A.

MORBIDITY REPORT
NAVMED-1390 (1-58)

Report Control Symbol MED-6310-2

Name and location of reporting facility

Station Hospital
NAS, Kokonut, Rhode Island

Period covered January 1958

Date prepared 3 February 1958

Part I. Average Strength

Line number	ACTIVE-DUTY MILITARY	TYPE OF PERSONNEL					
		Navy and Marine Corps			Army	Air Force	All other
		Total	Navy	Marine Corps			
		A	B	C	D	E	F
1	Total	2,333	2,222	111	10	30	
2	Negroid male				3	2	
3	Other male				6	28	
4	Negroid female						
5	Other female				1		

Part II. Patients Admitted, Disposed of, and Remaining, by Major Classification

6	Remaining from last report		23	20	3	1	2	3
7	Admitted from duty (A and RA)	Total admitted from duty (direct admissions) A and RA	65	60	5	2	6	4
8		Disease	52	50	2	2	6	
9		Nonbattle injury, total	13	10	3			
10		Aircraft accident	10	8	2			
11		Motor-vehicle accident	2	1	1			
12		Other	1	1				
13		Battle casualty, total						
14	Admissions from transfer		11	10	1			
15	Dispositions	Total dispositions	72	70	2	3	7	6
16		Deaths (excluding CRO's): Nonbattle	1		1			
17		Deaths (excluding CRO's): Battle casualty						
18		Transfers	13	13		2	5	
19		All other dispositions	58	57	1	1	2	
20	Remaining at end of period		27	20	7		1	1
21	Days on census for the period		542	492	50			2
22	Deaths, Carded for Record Only (DOA): Nonbattle		1		1			
23	Deaths, Carded for Record Only (KIA): Battle casualty							
24	Wounded in action (WIA) Carded for Record Only							

Part III. Venereal Disease and Nongonococcic Urethritis, Active-Duty Navy and Marine Corps Only

Line No.	CONDITION	TOTAL	ADMITTED TO SICKLIST	NOT ADMITTED TO SICKLIST
		A	B	C
25	Venereal disease, total class I(B) (lines 26-29)	3	1	2
26	Gonorrhea, acute	1		1
27	Syphilis, early	2	1	1
28	Chancroid			
29	All other venereal			
30	Urethritis, acute, nongonococcic	5		5

Exhibit B.

Part IV. Selected Categories and Conditions, Active-Duty Navy and Marine Corps Only

Line number	DIAGNOSTIC CATEGORY	DIRECT ADMISSIONS			Line number	DIAGNOSTIC CATEGORY	DIRECT ADMISSIONS		
		Total	Established	"DU"			Total	Established	"DU"
		A	B	C			A	B	C
31	Acute diarrheal conditions (class I(C), 7701-7704, 7856)				40	Acute upper respiratory infections (4100-4190)	9	9	
32	Scarlet fever & other streptococcic infections (0500-0530)				41	Influenza (4210)	4	1	3
					42	Pneumonia (4250-4280)	2		2
33	Poliomyelitis, acute (0800-0802)				43	Rheumatic fever, acute (4500-4520)			
34	Measles (0850)								
35	Rubella (0860)				44	Fever of undetermined origin (class XXIxy)	3		3
36	Mumps (0890)				45	Heat: Cramps, prostration, sunstroke (8404-8406)			
37	Hepatitis, infectious and serum (0920, 8903)	1		1					
					46	Prophylactic inoculation reaction (8905)			
38	Mononucleosis, infectious (0930)								
39	Malaria (1100-1160)				47	Penicillin reaction (8941)	1	1	

Part V. Special Diagnostic Categories, Active-Duty Navy and Marine Corps Only

Listed below are diseases which require a SPECIAL LETTER OR MESSAGE on occurrence.

Have one or more of the following diseases (established or suspected) occurred during the month?

YES [x] NO [ ]

If yes, insert number of cases opposite disease below and give reference to dispatch or letter report in the space provided.

48	Amebic infection		54	Encephalitic, infectious, acute		60	Relapsing fever	1
49	Cholera	1	55	Glomerulonephritis, acute		61	Smallpox	
50	Choriomeningitis, lymphocytic		56	Meningococcic infections		62	Tuberculosis, active	
51	Dengue		57	Paratyphoid		63	Typhoid	
52	Diphtheria		58	Plague		64	Typhus (endemic and epidemic)	
53	Dysentery, bacillary		59	Psittacosis		65	Yellow fever	

DATE-TIME GROUPS OF MESSAGE OR SERIAL NUMBER AND DATE OF LETTER

Line 49: 090932Z
Line 60: 151530Z

Part VI. Report of Outpatient Treatment for Certain Conditions, Active-Duty Navy and Marine Corps Only

Line number	CONDITION	OUTPATIENT NEW CASES	Line number	CONDITION	OUTPATIENT NEW CASES
66	Acute upper respiratory infections, including influenza	25	68	Penicillin reaction	
67	Acute diarrheal diseases		69	Heat: Cramps, prostration, sunstroke	

Part VII.

During the reporting period have there been any other unusual class I diagnoses or special medical problems related to infectious diseases which are not reflected in this report? YES [ ] NO [x]

If yes, summarize on separate attached sheet.

SIGNATURE

Joe Doaks, MC USN

A special letter or message providing additional information (see BUMEDINST 6310.4) is required on each of these diseases when it occurs. Space has been provided for listing the date-time groups of the message or serial number and date of letter submitted on each.

Part VI. To obtain a complete picture of the occurrence of acute upper respiratory infections, including influenza; acute diarrheal diseases; penicillin reaction; and heat cramps, heat prostration, and sunstroke, provision was made in part VI for reporting the number of new cases of these conditions which were treated on an outpatient basis. In the past it has been found that the full impact of these conditions on the health of the Navy is not given by inpatient data alone. Varying practices of admitting persons to the sicklist for these conditions make it impossible to get comparable and complete data without including outpatient cases.

Part VII. Provides for the reporting of any unusual infectious diseases or medical problems related to infectious diseases during the reporting period not reflected elsewhere in the report. The information is to be submitted on a separate attached sheet. Certain infections, such as epidemic hemorrhagic fever, schistosomiasis, systemic fungus infections, anthrax, etc., occur so infrequently that line reporting is unwarranted. Yet the occurrence of one or more cases has particular significance in terms of geomedicine and would normally initiate an inquiry as to details. Information desired to obviate necessity for special inquiries will be outlined in BUMED INST 6310.4. (Statistics of Navy Medicine, Vol. 13, No. 11, November 1957)

* * * * * *

New Film Releases

The Bureau of Medicine and Surgery announces the completion of a new film series which provides a unified audio-visual program for the instruction of hospital corpsmen in the elements of first aid. The doctrine presented in this group of films was formulated by an ad hoc committee on first aid, appointed from the Bureau by the Surgeon General in 1954. The series is composed of the following titles:

First Aid for the Injured - Introduction	(MN 8180)
First Aid for Asphyxia	(MN 8181)
First Aid for Bleeding	(MN 8182)
First Aid for Fractures	
Introduction	(MN 8184a)
Skull, Spine, & Pelvis	(MN 8184b)
The Triangular Arm Splint	(MN 8184c)

The Universal Leg Splint	(MN 8184d)
The Thomas Leg Splint	(MN 8184e)
First Aid for Burns	(MN 8185)
First Aid for Heat Stroke and Heat Exhaustion	(MN 8186)
First Aid Handling and Transporting	
Introduction	(MN 8187a)
Mastering Basic Techniques	(MN 8187b)
Lifelines, Improvised Stretchers and Carries	(MN 8187c)

These films replace MN 6466a-d, Personnel Damage Control, and MN 299a, Essentials of First Aid, which are obsolete. The new series is designed to be used in its entirety and, at least for initial presentation, in the order shown. The first film, First Aid for the Injured: Introduction, sets forth a systematic examination procedure for determining the kind and extent of injury, and a standardized examination routine for applying the indicated first aid procedures themselves; this is the framework. The other twelve films provide the details: specific points of recognition, specific treatment for the various injuries and conditions, and in each there is reference to the total framework established in the introductory film. This built-in repetition strengthens the instructional value of the series as a whole. In those areas where specific How to Do It instructions may have many variations of a general principle, as in the case of First Aid for Fractures (MN 8184a-e) and First Aid Handling and Transporting of the Injured (MN 8187a-c), the presentation has been subdivided: An introductory film in each case presents the principle and additional films present specific procedural instructions.

While these films do provide comprehensive coverage of basic first aid, it is assumed that for effective learning they will be supplemented with discussion and practice. The series is considered prerequisite to the more advanced instruction in the following training films:

MN 7484 Artificial Respiration - Back Pressure, Armlift
MN 7477 Sucking Wounds of the Chest
MN 7470 Penetrating Wounds of the Abdomen
MN 7469 Cricothyroidotomy
MN 7338 Medical Aid in Combat - Company Aid Men in Action
MN 7335 Use of Whole Blood, Plasma, and Serum Albumin

This series is not intended for the instruction of all hands; a less intensive series is in preparation for that purpose.

Prints of the films of this series are in process of distribution to Naval District Training Aids Sections and Libraries, Naval Hospitals,

Hospital Corps Schools, Dental Corps Schools, Marine Corps Schools, the Naval Medical School and the Naval Dental School. If not so available, inquiry may be addressed to Film Distribution Unit, Training Division, Bureau of Naval Personnel, Department of the Navy, Washington 25, D. C. (Audio Visual, BuMed)

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MSC Ensigns Complete OCS

In Vol. 30, No. 6 of the Medical News Letter, 37 successful candidates in the fiscal year 1958 Medical Service Corps inservice procurement program were welcomed aboard. They arrived at the Officer Candidate School, Newport, R. I. on 14 September and shortly thereafter received their appointments to the grade of Ensign, Medical Service Corps (Supply and Administration Section).

On 1 November 1957, these officers were graduated with appropriate ceremony, having been enrolled for the 7 weeks preceding in an indoctrination course. Subject matter covered Orientation, Duties of Division Officers and Watch Officers, Leadership, Military Justice, Operations, and Seamanship. On the last day of classes, 31 October 1957, they received a lecture on basic Medical Service Corps indoctrination presented by Captain W. C. Calkins MSC USN, Chief of the Medical Service Corps and Director, Medical Service Corps Division, Bureau of Medicine and Surgery.

Captain Calkins reports that his visit and presentation were very favorably received and his over all appraisal is that this represents the launching of a successful program. The second group of 40 new appointees reporting on 2 November 1957 began classes on 4 November 1957. Present planning is that all new appointees in the Medical Service Corps will be indoctrinated in this manner prior to first duty assignment. (MSCDIV, BuMed)

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Environmental Sanitation Course

By notification in Vol. 30, No. 4 of the Medical News Letter, interested Medical Service Warrant officers were invited to apply for duty under instruction in environmental sanitation. Because the desired number of applications did not materialize, the invitation is extended again, with the "less than 16 years' service" and deadline restrictions modified as follows: "Interested officers having less than 20 years' service should submit applications to reach the Bureau of Medicine and Surgery not later than 16 December 1957." (MSCDIV, BuMed)

Navy Mutual Aid Increases Terminal Dividend to $1,500

The Board of Directors of the Navy Mutual Aid Association, on 15 November 1957, voted to pay a $1,500 terminal dividend to the designated beneficiary of any member whose death shall occur after 1200 EST on 15 November 1957. This dividend is payable in addition to the regular benefit of $7,500 and is payable on a member's death in cash or as an annuity. The total death benefit is now $9,000. Paid-up memberships of less than $7,500, terminated by death, will be increased by 20%. This dividend does not increase loan or surrender value of memberships.

This action by the Board of Directors is the third increase in the terminal dividend since 1954. The Navy Mutual Aid Association is completing the most successful year in its history. Insurance in force has increased nearly 30% during the past 12 months to over $160,000,000. The membership has doubled during the last 4 years. (N. M. A. Assn.)

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Medical Record Librarians

An all day meeting of the Greater New York Association of Medical Record Librarians was held at U. S. N. H., St. Albans, N. Y., 16 November 1957. The program was arranged by Miss Lena A. Fekete RRL, President, and Mrs. Stella Blankfeld RRL, Medical Record Librarian of the St. Albans Hospital.

Included in the program were "Front Line Surgery in Korea," CAPT R. N. Grant MC USN: "The Hospital's Unwelcome Guest - Staphylococcus," CAPT G. L. Calvy MC USN, LCDR D. E. Taylor MC USN, LT L. R. Schumacher MC USN: "Floating Hospitals - Navy Hospital Ships," CDR P. L. Austin MSC USN: "Letterman System of Army Casualty Evacuation," CAPT L. F. Schroeder MSC USA. (USNH, St. Albans, N. Y.)

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Obstetric and Gynecology Board Certification Examination

The next scheduled examinations (Part II), oral and clinical for all candidates will be conducted at the Edgewater Beach Hotel, Chicago, Ill., by the entire Board from May 7 through 17, 1958. Formal notice of the exact time of each candidate's examination will be sent him in advance of the examination dates. Candidates who participated in the Part I examinations will be notified of their eligibility for the Part II examinations as soon as possible. (ProfDiv, BuMed)

From the Note Book

1. Commodore Lars Troell, Medical Corps, Surgeon General of the Royal Swedish Navy, recently concluded his visit to the U. S. Naval Medical Department activities in the United States. Since September 14, 1957, Commodore Troell has visited Naval and Marine Corps activities throughout the United States to discuss and observe matters of mutual interest to the United States and the Swedish Naval Medical Services. (TIO, BuMed)

2. CAPT W. W. Ayres MC USN was awarded the Sir Henry Wellcome Award of the Association of Military Surgeons at the annual meeting. CAPT Ayres was chosen as the recipient of the honor for his paper, "Ependymoma of the Cauda Equina." (TIO, BuMed)

3. CDR P. F. Fedi, Jr., and LCDR B. C. Sharp DC USN of the U. S. Naval Station, Treasure Island, Calif., recently presented a talk on "The Periodontic Problem and Prosthodontic Restoration" before the Southern Alameda County Dental Society and the Bay Area Armed Forces Prosthetic Study Group. (TIO, BuMed)

4. Two Dental officers on the staff of the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md., presented lectures at the 64th Annual Convention of the Association of Military Surgeons of the United States. CAPT C. E. Rudolph DC USN presented "Arch Continuity through Endodontics," and CDR H. H. Scofield, Jr., DC USN presented "Precautions in Biopsy Technique." (TIO, BuMed)

5. Reports from various States indicate that the incidence of influenza and influenza-like disease remains high, although a number of States report decreases. Some report a decrease in one part of the State and an increase in other parts. A few States report that absenteeism in industrial employee groups has increased slightly. The estimated total number of cases for the week ended November 9, 1957, in 38 States is about 1,100,000.

Mortality from all causes in 114 large cities decreased slightly—less than one percent—for the week ended November 9 as compared with the previous week. Deaths from influenza and pneumonia increased only about 4% as compared with 11% for the previous week. The total for the week (887) was about 3 times higher than the number (291) for the same week of 1956. The excess number of deaths from influenza and pneumonia since September 1 is 2410 in excess of the number for the same period last year. Nearly 90% of this excess occurred in the past 6 weeks. (PHS, HEW)

6. Seventy-seven patients suffering from arteriosclerotic and hypertensive cardiovascular disease with organic coronary insufficiency and angina

pectoris have been subjected to bilateral internal mammary artery ligation. Fifty of these patients have been carefully followed from 1 to 5 months. By conservative clinical evaluation, 34, or 68% of these patients have either lost their symptoms of pain or have been immeasurably relieved of their discomfort. The remainder were unimproved. (J. Thoracic Surg., November 1957; R. P. Glover, M. D., et al.)

7. Mucoid adenocarcinomas of the colon and rectum are histologically distinct tumors characterized by the presence of a mucous material, the chief component being mucin. The mucous may be primarily extracellular or intracellular. The series reported offers further evidence to substantiate the value of the modified Dukes' classification as a prognostic aid in cases of adenocarcinoma of the colon and rectum. (Surgery, November 1957; E. F. Wolfman, M. D., et al.)

8. Twenty-five consecutive cases of perforation of the acutely inflamed gallbladder are presented. During the period of study, 542 patients were admitted with a diagnosis of acute cholecystitis, for an incidence of perforation of 4. 6% and a mortality rate after perforation of 44%. (Am. J. Surg., November 1957; L. Morse, M. D., B. Krynski, M. D., CAPT A. R. Wright MC USA)

9. Present day criteria for selection of patients for open heart surgery are discussed on the basis of experience gained on 65 patients. The development of pulmonary arteriosclerosis in cases of malformation with a left-to-right shunt is the major factor in the circumstances that mitigate good postoperative results. With the advent of open heart surgery for congenital heart disease, the emphasis has come to be placed on corrective, rather than palliative, procedures. (Am. Heart J., November 1957; H. A. Zimmerman, M. D., et al.)

10. There is no single method of treatment for periodontal disease. Patients generally prefer conservative treatment to the use of surgical procedures and realize the necessity for longer therapy. Results of conservative treatment are good and no attempt to rush treatment should be made, as the cure of periodontal disease is a healing process and, as such, takes time. (J. A. D. A., November 1957; N. E. Alderman D. D. S.)

11. Oral treatment of burn shock is discussed in Archives of Industrial Health. November 1957; K. Markley, M. D.

12. The Archives of Surgery, November 1957, contains abstracts of articles presented at a symposium on "Surgery in Acute Trauma," at Tripler Army Hospital.

SUBMARINE MEDICINE SECTION

Misguided Frogman

A recent episode at a Naval shipyard illustrates several points of safe diving technique not adequately understood by many of the "weekend frogmen" along our coasts nor by many physicians.

The story essentially is this: A 37-year old civilian "frogman" attempted to set a depth record using an open circuit scuba filled with a helium-oxygen mixture. He entered the water, dove to approximately 370 feet, and surfaced using some sort of decompression table, but cut this short by about 47 minutes. He was in the water 1 hour and 24 minutes. Thirty-five minutes after surfacing, he noted pain in the right ankle which rapidly spread to the right hip and knee and to the neck. He arrived at a recompression chamber 8-1/2 hours after surfacing and 8 hours after the appearance of the first symptom.

He was placed in the only chamber available with a 52-year old civilian diver to act as his tender. Treatment was started within 8 minutes of arriving at the chamber which in view of the absence of "serious" symptoms was good time. Speech at the beginning of treatment was described as sluggish and there was some question of hearing loss.

During recompression the pain was relieved at 65 feet; after 27 minutes at 165 feet, hearing and speech appeared normal. At this point, the Medical officer supervising the treatment chose to follow Treatment Table #3 inasmuch as the symptoms and signs had cleared up completely—a completely justifiable decision (Submarine Medicine Practice, page 105 of Navy Diving Manual (1952), page 107).

Decompression proceeded uneventfully until the patient noted a recurrence of the pain in the right hip and neck and reported being dizzy. This was promptly recognized as representing a recurrence during treatment (Page 106, Submarine Medicine Practice). Pressure was built up gradually in the chamber while the patient was observed for relief of symptoms. No appreciable improvement was noted before the pressure was equivalent to 165 feet. The chamber was held at this pressure. After 20 minutes, the pain and dizziness disappeared. In view of the failure of treatment on Table #3, the longer Table #4 was used to decompress the patient. Decompression was completed 2 days and 1 hour after the dive was started and 38 hours and 29 minutes after treatment was started. All symptoms and

signs had disappeared at the completion of the treatment. The diver refused to remain in the vicinity of the chamber contrary to advice.

Approximately 9-1/2 hours after completion of the episode outlined above, the tender noted aching in the left knee which grew worse rapidly. Treatment by recompression was started approximately 1 hour after this symptom was first noted. As pressure was increased, the pain was less at 30 feet and relieved at 40 feet. The medical officer wisely regarded this as a "recurrence" even though it was a first symptom and prescribed treatment on Table #3. Treatment was completed 15 hours and 45 minutes later. The patient was completely free of symptoms and remained so. Thus, the episode which began when the diver entered the water was not concluded until 75 hours and 42 minutes later.

Comment

The welter of fiction and misdirected "guidance" from self-appointed experts in diving now flooding the news media is misleading many interested people to engage in reckless—ridiculous—undertakings which threaten to spoil the new sport of scuba diving. No physician in this country can consider himself apart from this problem any longer. Any interested physician can procure a copy of Submarine Medicine Practice (NavMed P-5054) from the Government Printing Office for $2.00 and at least give himself a reading acquaintance with sound time tested advice. The following remarks are offered for their instructive value:

This was a misguided undertaking from the beginning because of faulty planning in at least these respects: inadequate provisions for decompression which is quite an undertaking with scuba equipment; uncertainties regarding true depth of dive and "bottom time" which is the key to choosing an appropriate decompression schedule; the choice of a decompression schedule of doubtful merit and even then cutting it short; inadequate provision to care for a casualty at the site of an undertaking which reasonably could be expected to cause a casualty. This last consideration resulted in an extended delay in starting treatment which is one of the most common causes of failure of treatment. Fortunately, it appears this diver recovered completely.

The reappearance of symptoms during treatment should not be confused with the situation presented when symptoms occur during decompression from a dive. In the latter instance, it is often possible to convert the decompression for the dive to a treatment routine. The recurrence during treatment is more difficult to handle. (See pages 106 and 107 of Submarine Medicine Practice.)

The uninitiated may ask why pressure greater than that equivalent to 165 feet is not used in treatment. The explanation is based on the hypothesis that the symptoms are caused by a spherical gas bubble blocking the arteriole leading to the site. As pressure is increased, volume is inversely decreased. The diameter of a sphere does not follow this directly so that

by the time one reaches 165 feet depth the reduction in diameter of the bubble is not greatly reduced by further increases in pressure.

When decompression is completed the patient should remain near the chamber for at least 8 hours, preferably 24 hours, because as time passes the probability of recurrence of symptoms decreases rapidly until at 24 hours they are quite low. The question of whether to recompress a diver for symptoms appearing for the first time more than 24 hours after surfacing from the last dive requires a degree of finesse which cannot be conveyed briefly here.

The tender developing symptoms points up some interesting facets. At 52 years of age he is not a good candidate for being either a diver or a tender, but he was probably the only knowledgeable man available. At 52 years, his vascular bed and cardiorespiratory mechanism simply do not handle the gaseous exchange involved in this circumstance adequately. He may be in fine physical condition for a man of his age and because of experience be suitable for short shallow dives. His usefulness as a deep diver is doubtful and one need go no further than his age for an explanation.

Cases such as this often raise questions about what the doctor should do—go in the chamber with the patient, stay outside, or what! When there is only one doctor present and the patient is conscious the doctor should remain outside where his mental faculties for evaluation will not be dulled by nitrogen narcosis. If the patient is unconscious, artificial respiration, perhaps tracheotomy, may be required. This calls for adequate advance preparation of the chamber and adequate skill in the chamber. Another doctor should be called to stand by outside and evaluate the evidence in terms of the routine treatment schedules. This episode demonstrates excellent judgment and successful treatment. Congratulations, Lieutenant Charles R. Wilson, Jr., MC USNR!

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

RESERVE SECTION

The following article printed in the August 1, 1957 issue of the Bulletin of the Los Angeles County Medical Association will be of interest to all Naval Reserve Medical personnel on active and inactive duty. Acknowledgement is made to the Los Angeles County Medical Association for permission to reprint the article.

An "Old Hand" Reports on Navy Medical Reserve

"I have been asked to write about Medical Company 11-1, U. S. Naval Reserve of which I am the present commanding officer.

The Company, one of two in Southern California (the other being in San Diego) has headquarters at the Naval Armory, 851 Chavez Ravine Road, Los Angeles 12. Its purpose is to carry out a training program which consists primarily of regular Monday meetings, usually held at the Armory between 7:30 and 9:30 p. m.

The programs are related to some aspect of Naval Medicine. During the last year we had a series on "Atomic Medicine," provided by the Navy Bureau of Medicine and Surgery.

Company members also may take training cruises, various courses at schools, and/or correspondence courses. Active duty is not required since good standing may be maintained by attending drills and taking correspondence courses.

For those of you who remember the old Navy Correspondence courses with distaste, I would like to note that they have been thoroughly overhauled and are now so well presented that it is a pleasure to read them. Examination questions are all of the multiple choice or true and false type.

Membership in the company is voluntary and is composed of officers of the Medical Corps, Nurse Corps, and Medical Service Corps. Anyone with a Naval Reserve Commission in these corps may request orders to the company. The group is an interesting one and we have many members who are leaders in the medical profession. It runs heavily to specialists, with the general practice group less well represented.

We feel that belonging to the Navy Reserve is well worth while. It is a community enterprise of first rank. M. D. 's always have provided the Armed Forces with medical care and always must.

Promotions in the Medical Reserve now have a definite progression. At long last the doctor is being given credit for the extra five years' training (as compared with line officers) he must have to qualify for a

Medical Corps commission. The Reservist also moves along promotion-wise with a Regular Navy "running mate."

Retirement in the Reserve comes after 20 years' service or at the age of 60 with at least 20 years of service. The retirement status is exactly the same as the regular service, although the retirement pay generally is less because the doctor has usually served a fewer number of days.

To estimate the value of this retirement plan you might ask your own insurance man what you would have to pay in to obtain for life at the age of 60, $135 a month income plus a non-cancellable hospitalization insurance. There are other benefits, too, but this much should illustrate the point.

There are many doctors who already have served their required active duty time or more, who like the Navy and would enjoy belonging to the Company, but do not because of their own or their wives' apprehension over being arbitrarily recalled to active duty. To allay these fears, it should be pointed out that the Navy does not regard the Medical Reserve Company as a handy group to recall quickly.

Its problem is like yours when you are looking for a new office assistant—lots of available people, but few that are trained. Fortunately for all of us, the Navy is acutely aware that the next year will be vast (count the people opposed to us), fast (jets, etc.) and deadly (atomic weapons).

Mobilization must be so fast that the time differential between calling out the Reservist and the non-Reservist is purely academic. When and if the medical manpower barrel is scraped and polished, the Reservist will be able to function more efficiently because he does have a concept of Navy problems and solutions. The Navy also has had the opportunity to know what the man can do best and what he prefers to do, making for a more efficient and satisfactory assignment for all concerned.

Not too long ago, I spent a week with other Medical Reserve doctors at the Bureau of Medicine and Surgery in Washington, during which we were given an opportunity to meet and talk with the men in charge of various aspects of the Navy medical program. With the Navy scattered over most of the world, it was a revelation to learn the scope of its problems and the hugh research and teaching projects aimed at settling them. Everyone seemed to be working like mad and getting things done. I wish that all of the members of the Los Angeles County Medical Association could have been along to see and hear what is going on there, and then perhaps you too would extend your respect and appreciation to this group of fine doctors and men—maybe you might even feel like putting your shoulder to the wheel a bit, to help out, not necessarily to rehabilitate your commission or obtain one, but at least help to awaken in youth a just sense of our national advantages and blessings and the necessity of protecting them." (CAPT John H. Morton MC USNR)

Reserve Selection Board Schedule for Fiscal Year 1958

Promotion zones and tentative convening dates for selection boards to consider eligible Naval Reserve Medical Department officers for promotion during fiscal year 1958 are shown in the following tables:

TABLE I

PROMOTION ZONES AND CONVENING DATES OF SELECTION BOARDS - FISCAL 1958

	For promotion to				
	CAPT	CDR	LCDR	LT	LTJG
Tentative convening dates:					
LINE	1-14-58	1-14-58	3-11-58	4-15-58	
STAFF	2-25-58	2-25-58	4-29-58	6-03-58	
Date of Rank as:	Promotion Zones				
CDR	2-01-50				
LCDR		2-01-54			
LT			7-01-53		
LTJG				12-16-55	
	Promotion Zones - Wave Officers				
LCDR		7-01-54			
LT			7-01-54		
LTJG				12-04-55	
ENS					6-04-54

If you are a Reserve Medical Department officer in the grade of lieutenant (junior grade) or above, within the promotion zone as shown in the following table (TABLE II) you will be considered for promotion if you are:

1. A TAR officer on active duty (XXX7) designator, or

2. On active duty but have not been considered by an active duty board in fiscal year 1958, or

3. Reserve officers on inactive duty, in an active status, and who have earned at least 12 retirement points during fiscal year 1957. (officers released from active duty on, or after, 1 July 1954 are not subject to these retirement point requirements), or

4. Women Reserve officers on active duty. (Excluding Medical Service Corps or Nurse Corps).

TABLE II

1 JUL 1955 REGISTER NUMBERS OF JUNIOR RESERVE OFFICERS ELIGIBLE

Designator	For promotion to			
	CAPT	CDR	LCDR	LT
	Register Numbers of Junior Officers			
2105	1250	*	*	**
2205	225	*	2021	**
2305	15	204	293	**
	Register Numbers of Wave Officers			
2105		8	22	**
2305		17	61	**

*Not in 1955 Register in Correct Grade and/or Precedence Position.

**Not in 1955 Register as Lieutenant (junior grade). See Table I.

Note: Where no register number is listed, no selection board is scheduled.

Reserve Warrant officers will be considered for promotion by selection boards which will convene on 13 May 1958. To be eligible for consideration for promotion, they must have earned 12 retirement points during fiscal year 1957, and on 30 June 1959 will have completed the following number of years' service in present grade: W-1 to W-2, three years; W-2 to W-3, six years; and W-3 to W-4, six years.

Officers of the Nurse Corps Reserve are eligible when they are senior to the junior officer of the same grade of the Nurse Corps on active duty on

a lineal list who has been selected for promotion. Therefore, promotion zones for Reserve officers in the Nurse Corps will be established when the fiscal year 1958 lineal list selection boards have been approved for Nurse Corps officers.

All officers who are within the 1958 promotion zones should make sure that their fitness reports for training duty, annual fitness reports and annual qualification questionnaires are up to date. These reports must cover the periods ending before the convening date of their selection boards.

Reports must reach the Chief of Naval Personnel in time to be included with the officers' records when presented to the appropriate selection boards.

Special fitness reports are not required. However, any officer eligible for consideration for promotion may forward a letter, through official channels, bringing attention to any matter of record concerning himself which he believes important to his consideration. This letter must arrive no later than the convening date of the selection board. It may not criticize or reflect upon the character, conduct, or motive of any officer.

Further information may be found in BuPers Notice 1412, dated 22 October 1957.

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DENTAL SECTION

Naval Dental Clinic - Yokosuka, Japan

In the interest of furthering good Japanese-American relations, as well as contributing to improved dental standards, and in keeping with the policy of the Government of the United States, the U. S. Naval Dental Clinic, Yokosuka, Japan, under the command of Captain V. A. LeClair DC USN has been active in maintaining liaison with Japanese dental practitioners Many formal meetings and frequent social gatherings have been held and many technical demonstrations have been conducted for the mutual benefit of the Japanese and American dentists. Contacts have been extended recently to include various dental colleges and universities in Japan and a number of the dental societies in the larger cities.

Professional activity outside the U. S. Naval Dental Clinic began with invitations for dental officers of the clinic to demonstrate "high speed techniques" in operative dentistry at the Tokyo Dental College, Tokyo Medical-Dental University. The demonstration developed into a series of lectures and clinics at the Tokyo Dental College and at the universities in Yokohama and Kawasaki City. Another series of similar lectures and demonstrations were given under the sponsorship of the Japan Dental Association at Iwakuni, Kobe, Kyoto, Osaka, and Nagoya. Attendance ranged from fifty per group to three hundred fifty at Osaka. Other lectures and demonstrations were given in the field of prosthodontics, including complete and partial denture construction.

In addition to other professional activities, many of the Navy's dental films have been shown to thousands of Japanese dentists throughout the islands of Japan with the cooperation of the Japan Dental Association and manufacturers of dental supplies in Japan.

The intense interest on the part of the Japanese dental schools, universities, local societies, and the Japan Dental Association relative to the clinics, lectures, and professional dental films has stimulated the dental officers of the Naval Dental Clinic to prepare a series of lectures for translation into the Japanese language and for publication in a number of Japanese dental journals.

Technical aid has been furnished to the Japan Self Defense Force in setting up administrative procedures for a Dental Service in the Japan Maritime Force. Training publications and material for the curriculum for Dental Technician Training were also furnished.

In commemoration of the completion of the U. S. Navy Dental Clinic, Yokosuka, Japan, a Dental Seminar was sponsored by the Japan Dental Association at the clinic on September 27, 1957, with 232 Japanese dentists in attendance. Twelve clinics and several demonstrations were presented to portray basic techniques in dentistry. To overcome the language difficulties, each room was labeled in Japanese to indicate the subject being presented, and an outline in Japanese was provided for each visitor to describe the material presented in the clinics. Japanese dental assistants were thoroughly briefed as to the nature of the clinic so that most questions could be answered with a minimum of confusion. English sound tracks of films on local anesthesia were translated into Japanese and presented at the Seminar.

The interest and appreciation expressed by the Japanese dentists who attended the professional meetings indicate that the lectures, clinics, and demonstrations were highly successful.

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Award Winning Exhibit - Navy Dental Corps

Modern Dentistry for the Modern Navy, the new U. S. Navy Dental Corps exhibit, won the award as the best scientific exhibit of its class at the 98th Annual Session of the American Dental Association in Miami and Miami Beach, Fla., November 1 - 4, 1957.

The award winning exhibit portrays by means of 16 x 20-inch color transparencies on eleven panels contributions of the U. S. Navy Dental Service to the dental sciences. The panels which consist of 8 to 16 transparencies demonstrate the technique developed and used in the Navy in the fields of Periodontics; Surveying and Mouth Preparation; Remount Procedure and Tissue Recovery; Endodontics; Crown and Bridge, Operative Dentistry; Oral Surgery, Oral Pathology, Maxillofacial Prosthesis; Dental Research and Training Aids.

Monitoring the exhibit for the U. S. Navy Dental Corps were Captain J. V. Niiranen DC USN, Captain G. W. Ferguson DC USN, and Captain H. J. Towle, Jr. DC USN of the staff of the U. S. Naval Dental School, National Naval Medical Center, Bethesda, Md.

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Closer Observation of Applicants Necessary - for DTG Basic Class "A"

The quality of instruction in Dental Technician, General (Basic) Class "A" is constantly improving as a result of advanced teaching techniques, greater emphasis on individual instruction and more effective counselling of students. Nevertheless, there have been individual classes in which attrition has been abnormally high and the scholastic average unusually low. It was noted that these classes had a large number of students with low GCT/ARI scores. For example, one class convened with 60% of the students having a combined score below 100, and 15% of the students below 80. Although many of the attrited students came from ships and stations where they had served as strikers and could be subjected to close scrutiny, adequate screening of applicants had not been accomplished. Dental officers are cautioned to carefully observe and screen all applicants (strikers), and in particular the applicants with a low combined score, before requesting waivers or recommending the applicant for a course of instruction in Dental Technician, General (Basic) in accordance with BuMed Instruction 1510.6A of 12 April 1957.

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Clinical Laboratory Technique

Due to the enthusiastic response of dental technicians for instruction in Clinical Laboratory Technique, additional requests are not desired during FY '58.

PREVENTIVE MEDICINE SECTION

Advantages of Hospital Admission Chest X-Ray Examinations

Routine hospital admission chest x-ray examinations are performed in only 30.1% of all hospitals in the United States. It is difficult to comprehend the reasons for such complacency when as long as 20 years ago the value and necessity of such examinations were demonstrated. Chest x-ray examinations should be considered a necessary and integral part of a patient's studies in the hospital

Routine chest x-ray examination of the hospital population provides a method of decreasing communicable diseases and is important to all hospital personnel and their families. The incidence of tuberculosis, for example, is said to be greater among hospital personnel than among workers in any other industry. The same applies to other communicable respiratory diseases. Preemployment and at least annual chest x-ray examinations of employees are essential in any hospital chest x-ray program. Also inherent in such programs is the making of semiannual chest x-rays of those on the attending and house staffs.

Many unsuspected cases of chest disease amenable to treatment are uncovered by admission chest x-ray examination. Prompt treatment of these patients decreases morbidity and mortality rates and the length of hospitalization.

In the evaluation and preparation of the surgical patient, the routine admission chest x-ray is of inestimable value to surgeons and anesthesiologists. The correlation of the physical findings with the x-ray findings provides a more accurate appraisal of the patient's cardiopulmonary status than either of the findings alone, particularly when inhalation anesthesia is used. The x-ray findings often have a direct bearing on the choice of the anesthetic agent and type of surgical procedure.

Everyday roentgenography of the chest is faced with the problem of ascertaining, if possible, the acuteness or chronicity of thoracic abnormalities. Many such questions can be resolved promptly and easily if previous chest x-rays are available for comparison. Admission chest x-rays provide such valuable records, particularly in patients with postoperative and other types of thoracic complications. X-Ray diagnosis of chest disease is thus made more reliable and accurate.

Chest x-ray examination of the more than 20 million patients who are admitted to hospitals annually would provide information of immediate importance to the patient, as well as valuable data for subsequent study of the natural history of many chest diseases. The potentialities of the use of such data in the study of primary cancer of the lung has been demonstrated.

The availability of routine chest x-ray in compensation and accident cases provides data valuable in the treatment of the patient and in the consideration of compensation claims.

Survey chest x-rays provide the members of the house staff with an opportunity to become acquainted with the appearance of the average or "normal" chest x-ray. These films also provide a necessary check on the physical findings of the members of the house and attending staffs. From such correlations the house staff members learn of the limitations of the various forms of examination and the indications for further x-ray investigation.

The routine chest x-ray is an invaluable component of the examination of patients in hospitals. Programs of making chest x-rays on admission make the hospital an educational center for detection, diagnosis, treatment, and even follow-up.

Chest x-ray screening of hospital patients reveals significant positive abnormalities in 10 to 15% of patients. It is granted that the presence of many of these abnormalities is suspected, but in just as large a percentage the severity or extent of disease and/or reactivation of previous disease is often suspected. The percentage of significant positive findings disclosed by admission chest x-ray examination is greater than that revealed by any other routine hospital laboratory procedure.

The great strides recently made in the treatment of tuberculosis have given a false sense of security and have resulted in erroneous conclusions. Although the death rate from tuberculosis has fallen precipitously, the case rate in most areas has shown no corresponding or significant change.

In general hospitals, pulmonary tuberculosis is found in 1 to 3% of patients and accounts for 10 to 15% of the significant positive findings in the new admissions. The rate of tuberculosis found among hospital patients is 2 to 8 times the rate found in mass surveys. Ill patients entering general hospitals are also more likely to have more advanced forms of tuberculosis. Tuberculosis is more frequently overlooked in hospital patients over the age of 50 years than in those under the age of 40 years. Emphasis has been placed on the necessity of examining the aged. This segment of our population might very well account for the sustained rate of transmission and case rate of tuberculosis.

Diseases other than tuberculosis are found in 80 to 90% of the patients in whom there are significant positive findings in hospital admission surveys. Many great vessel and cardiac abnormalities are found in hospital chest

x-ray surveys. The presence of some or most of these lesions is previously suspected, but in many patients the severity of the condition is underestimated. The number of patients in whom heart disease is detected is at least four times the number of those in whom tuberculosis is found. Screening surveys provide an excellent means of detecting patients with heart disease as well as those with tuberculosis.

Diaphragmatic abnormalities and changes in the lungs due to atelectasis that are revealed on admission x-rays often provide early clues or hints of the presence of intra-abdominal disease. When portions of the upper extremities and lower neck are included on admission chest minifilms, it is not unusual for unsuspected lesions in these areas to be detected.

The results of chest x-ray surveys for the detection of curable cancer of the lung have been disappointing. The poor results obtained to date are not attributable to the x-ray method, but more probably to lack of appreciation and delineation of the x-ray signs of early cancer of the lung. Unfortunately, when the x-ray evidence is characteristic, cure is almost impossible. It is possible to detect the presence of cancer earlier if suspicion is aroused by any unexplained pulmonary abnormality.

Summary and Conclusions

Examination of the chest by x-ray as a routine part of admission to the hospital offers many advantages. The detection of unsuspected communicable disease in a new patient helps to protect hospital personnel as well as other patients. The chest x-ray has been shown to reduce the number of erroneous diagnoses, to be valuable to the anesthesiologist before surgery, to be an important part of the records in accident and compensation cases, and to be especially useful in teaching hospitals. It is essential to the control of tuberculosis at its source and offers hope of earlier detection of cancer of the lung.

(Melamed, A., Advantages of Hospital Admission Chest X-Ray Examination: J. A. M. A., 163: 718-720, March 2, 1957)

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Shipboard Insect Control Survey

The development of an adequate program for the accomplishment of effective pest control aboard Naval vessels is a matter which continues to receive extensive consideration by Navy Medical Department preventive medicine personnel. To recapitulate briefly, the Medical News Letter, Vol. 29, No. 2, dated 18 January 1957, reported the results of a shipboard insect control survey conducted by Preventive Medicine Unit No. 6 with the cooperation of the Commander Service Force, U. S. Pacific Fleet.

The Medical News Letter, Vol. 30, No. 1, dated 5 July 1957, announced the establishment of a standard short course in shipboard insect and rodent control at all preventive medicine units, the Navy Disease Vector Control Center, Jacksonville, Fla., and the Vector Control Unit, Naval Air Station, Alameda, Calif. This training program is now operating at a high level of efficiency. Training syllabi have been prepared by each of the activities and training aids are being developed. Additionally, a training film designed specifically for use with this short course has been approved and will go into an actual production phase some time in 1958.

An official action which valuably aided this entire program was the issuance of BuShips Notice 4441, Pest Control Materials and Equipment; recommended shipboard allowance of, on 25 July 1957.

To provide further background on the pest control problems commonly encountered on board Naval vessels, the results of a shipboard insect control survey of ships in the Atlantic Fleet (Norfolk area) made by Preventive Medicine Unit No. 2 have recently become available and are briefly reported here.

This survey was conducted by making personal visits to one hundred ships in the Norfolk area—a total which includes almost every class of Naval vessel. Of the 100 ships surveyed, 86% had infestations of one or more kinds of insects. Cockroaches were by far the main pest encountered, infesting 82% of the ships. Bedbugs were present on 25%; drystores pests were found on 1%; and rodents were present on 1% of all ships surveyed. The lack of proper pesticides and pesticide dispersal equipment was found to be the largest single contributing factor to the failure of adequate control. Only 12% of the ships had an adequate supply of these items. The most common mistake encountered in the conduct of pest control was the application of residual insecticides with space spraying equipment. Only 22% of the ships were applying insecticides according to recommended procedures. The sanitation conditions aboard the majority of the ships were average, with a tendency for more ships to be below rather than above average. Almost all ships—if not all—had at least some form of food about the messing area that would support cockroach infestation.

There is no doubt that cockroaches constitute the most difficult shipboard pest control problem. The main reasons are:

Improper application of insecticides
Improper insecticides
Resistance to insecticides
Improper equipment
Inadequate sanitation

The most frequent mistake in this group appears to be improper application of insecticides due mainly to lack of trained personnel to apply or to supervise the application of the insecticides. Also it is apparent that many never take time to read the labels on the container and as a

result do not know what insecticides they are using, let alone the protective measures that that must be taken to insure that these toxic materials are safely used. Because it is steadily increasing, resistance is also becoming an important factor in cockroach control aboardship. German cockroaches were the only species found during this survey.

The incidence of bedbugs aboardship is high. The reasons for this unsatisfactory situation are similar to those listed for cockroaches. One case of bedbug resistance to DDT was encountered.

The incidence of drystores pests appeared to be low. There were no apparent problems in the control of these pests aboardship after the infestations were discovered, although sometimes such infestations resulted in the loss of hundreds of dollars worth of provisions before control was begun.

Such pests as flies, moquitoes, lice, and rodents constitute sporadic problems aboard ships in this area. However, the problems are usually minor and for the most part are easily controlled.

The lack of proper equipment constitutes a major handicap in obtaining satisfactory control of shipboard pests. Much of the equipment presently aboard ships has been procured by inexperienced personnel who had little conception of its capabilities or intended use.

Six percent of the ships were using nonstandard pesticides without prior approval as required by the Bureau of Supplies and Accounts Manual, paragraph 23884. Four percent were awarding contracts for pest control to commercial companies, all without receiving prior contract review and approval as required by BuShips Instruction 6250. 1 of 15 July 1957.

Very few ships were using personnel who had had any type of training in the conduct of pest control measures. This is an extremely important factor and contributes much to the problem. Although a ship may have adequate pesticides and equipment aboard, if the personnel using these items have no previous training or experience, satisfactory and efficient control cannot be expected. However, it is believed that the one-day pest control training course which is now being regularly conducted by Preventive Medicine Unit No. 2 in the Norfolk area will do much to improve this situation.

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Microwave Radiation Hazards

The following general background data and information involving high microwave power is furnished so that estimates can be made of possible future electro-magnetic (e. m.) radiation hazards. This information was abstracted from the article, Future Microwave Radiation Hazards by Dr. Morris Handelsman, Associate Director, Research and Development, Rome Air Development Center, which was presented at the Proceedings

of the Tri-Service Conference on Biological Hazards of Microwave Radiation, 15 - 16 July 1957, at the Rome Air Development Center, Griffiss Air Force Base, Rome, N. Y.

Both radar and communication systems will contain hazardous e. m. power densities. For the most part, the radar systems are characterized by pulse operation and scanning antenna beams, while the communication systems are continuous wave in nature and usually have fixed antenna beams. However, this is not now, nor in the future will it be true for all systems. For example, certain radars may have antenna beams fixed in space and certain communication systems may have scanning beams. This is of obvious importance in estimating exposure times to radiation.

The general search radar scans through 360° in azimuth, rotating uniformly at 2 to 10 revolutions per minute. The azimuth beamwidth (angular spread between 3 decible (db) points) may be on the order of 1 to 5°. The antenna is mounted on a tower from 25 to 100 feet high. The radiated antenna beam is usually tilted upwards slightly so that radiation in the direction of the horizon is about 3 db (50% reduction) down from that in the direction of the peak of the beam. However, this upward tilt is not always the case at each site. In addition, a "searchlight" mode (i. e., stationary or fixed antenna beam) may be employed at different times lasting for varying periods.

The typical nodding-type antenna on a radar height finder operates by first slewing around to a designated azimuth position, and then nods up and down in elevation from about -2° or -4° to some upper angle, usually more than ∔5° (horizon is 0°) to establish the elevation angle of a target. About 10 to 20 complete up-and-down nods per minute is typical. This type of radar is often used in a searchlight mode at any elevation and azimuth angle of interest.

There are several subdivisions within each system where significantly different e. m. levels exist. First, there is a rather high power density in the transmission line, which presumably is closed and, therefore, not readily accessible. The power density in the line, for practical purposes, is: $W=\frac{P}{A_t}$ where:

W = power density, average watts per square centimeter (watts/sq. cm.)

P = average power output of transmitter, in watts

A_t = cross-section area of transmission line, in sq. cm.

Next, the power is conveyed by the transmission line to an antenna feed, which in turn "feeds" the energy on to the antenna. The energy in transit from feed to antenna propagates through space which is usually open or not enclosed and, therefore, somewhat more accessible to personnel than the inside of the transmission line. In the aperture of the feed, the power density is given—again approximately—by the above equation, except now

the feed aperture area (A_f) is used in the equation. The feed aperture area A_f is usually larger than the transmission line cross-section A_t, so that the power density in the feed is less than in the line. Finally, the e. m. energy is radiated into free space by the antenna so that the system can perform its function. Here we have "lost control" of the e. m. energy in the sense that it is now radiating into the outside world. Because the operational requirements of the system demand that this energy be radiated into the outside world, it is here that we may face our biggest problems in the control of possible hazards.

The manner in which the antenna radiates its energy is somewhat complicated and subject to many variations. The available power P furnished from transmitter through the transmission line and then the antenna feed to the antenna itself, is radiated outwards from the antenna, in a direction normal to the antenna aperture in most cases (but with very important exceptions in other cases). In order to obtain useful beams with low side-lobes, the energy is "tapered" across the aperture. A taper decreases the energy (power) smoothly from the aperture center where it is a maximum to the aperture extremities where it is on the order of 10 db (one-tenth) down from the maximum After the e. m. energy leaves the aperture, its variation or dependence upon distance from the antenna needs to be calculated. At distances "close" to the antenna, designated as the Fresnel or near-field region, the power remains fairly constant with distance and is collimated in a beam of about the same size as the projected area of the aperture. It can be calculated approximately by the formula $R_{Fresnel} < \frac{1}{4} \frac{D^2}{\lambda}$ (R = distance from antenna, ft.; D = antenna aperture dimension, ft.; and λ = wavelength, ft.). The energy is not uniform across this beam due to the taper previously described. The power densities inside the Fresnel region at the beam center and beam edges are respectively:

$$W_{\text{beam center}} \approx 3P/Aa$$

$$W_{\text{beam edges}} \approx P/3Aa$$

Beyond the Fresnel region, the radiated beam begins to spread out until at far enough ranges, the power density is decreasing according to the well-known law of inverse square distance. The range beyond which this inverse square law variation begins is the far field or Fraunhofer region and is given very approximately by $R_{Fraunhofer} > \frac{D^2}{\lambda}$. A region of transition between the Fresnel and Fraunhofer fields is referred to as a quasi-Fresnel or cross-over region. In the Fraunhofer region, the radiation is in a diverging beam shape, with maximum intensity at the beam center, and decreasing away from the beam center with angle. The larger the antenna, the narrower the lobe or the higher the "concentration" of power. The concentrating action of an antenna is referred to as its "gain." A large antenna with a narrow beam thus has a large gain. In terms of

this gain, the power density at the beam center in the Fraunhofer region is $W = \frac{PGa}{4 \pi R^2}$ (Ga = antenna gain):

Higher power systems may occupy frequency bands as low as 50 megacycles per second (mc./s.) for radars and 100 kilocycles per second (kc./s.) for communication, up to about 20,000 mc./s. or more, to use round figures. Average power levels may vary from about 1 to 10 kilowatts at the upper frequencies to perhaps several hundred kilowatts toward the lower frequencies. A level of one megawatt average radiated power may be a distinct possibility.

Transmission line sizes may vary from about 6 to 8 inches in diameter in the coaxial types and several square feet (area) in waveguide types at the lower frequencies down to the standard waveguide sizes at the upper frequencies (e.g., area of 0.5 sq. in. for X-band). Power densities in the waveguide transmission lines may be as much as 1000 average watts/sq. cm., thereby exceeding some selected value, such as 0.01 watts/sq. cm., by a factor of something like 100,000 times.

Turning to the antenna feeds, these vary in area from square inches at the higher frequencies to square feet at the lower frequencies, with many variations from this norm due to specialized feeds for specific purposes. A person looking into, or exposed to, the radiation from these feeds, or standing inside one (quite possible!) will encounter average power densities less by a factor of 5 to 50 times that in the transmission lines, but still larger than 0.01 watts sq. cm. by a possible 10,000 times.

In considering the antenna radiation, we find that in the near (Fresnel) field, average power densities may be in the range of 0.0001 to 1.0 watts/sq. cm., the latter value thereby exceeding 0.01 by a factor of some 100 times. The ranges (Fresnel) in which such power densities obtain may be on the order of magnitude of a mile. Beyond this distance, the previously described Fraunhofer decrease with distance as $1/R^2$ takes over, and equation for power density at the beam center $\left(W = \frac{PGa}{4 \pi R^2}\right)$ may be used for computation. It should be noted that many sites may have several similar or different radiating systems "on the air" at the same time. In addition, these radiation power densities exist over widely varying time periods depending upon particular systems usage.

In summary, there are a tremendous number of possible combinations of power, densities, frequencies, and exposure times. This will require careful and complete research and planning to prevent e.m. radiation hazards in the laboratory, manufacturing plant, and in the field.

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Swimming Pool Injuries, Mycobacteria, and Tuberculosis-Like Disease

Abrasive accidents in swimming pools are not rare. They may occur in diving, in getting in or out of the pool, or in underwater swimming. Most frequently, such accidents involve the bridge of the nose, the elbows, or the knees. Although in themselves they are seldom of consequence, it has recently been recognized that this type of accident may lead to inoculation lupus vulgaris, granulomatous tuberculosis lesions, or other tuberculosis-like lesions.

What is not known is how widespread or frequent the infections are. The finding of cases in Europe, Canada, and the United States would indicate widespread geographic distribution. Those concerned with the operation of swimming pools should be aware of the potential hazard from this source, and the clinician should consider swimming-pool trauma in the diagnosis of tuberculosis-like skin infections.

From the limited data available, it would appear that swimming-pool construction and sanitation may play a significant role in controlling the spread of this disease entity. Smooth-surface walls and breakpoint chlorination have proved effective in curtailing epidemics. (Greenberg, A. E., S. M., and Kupka, E., Swimming Pool Injuries, Mycobacteria, and Tuberculosis-Like Disease: Pub. Health Rep., 72:902-904, October 1957)

Note: Information concerning chlorination of swimming-pool waters is contained in Chap. 4, Swimming Pools and Bathing Places, Manual of Naval Preventive Medicine, NavMed P-5010-4.

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